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A Different Look at Lenin's Legacy: Trust, Risk, Fairness and Cooperativeness in the Two Germanies

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A Different Look at Lenin's Legacy: Trust, Risk, Fairness and Cooperativeness in the Two Germanies

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Abstract

What are the long-term effects of Communism on economically relevant notions such as social trust? To answer this question, we use the reunification of Germany as a natural experiment and study the post-reunification trajectory of convergence with regard to individuals' trust and risk, as well as perceived fairness and cooperativeness. Our hypotheses are derived from a model of German reunification that incorporates individual responses both to incentives and to values inherited from earlier generations as recently suggested in the literature. Using data from the German Socio-Economic Panel, we find that despite twenty years of reunification East Germans are still characterized by a persistent level of social distrust. In comparison to West Germans, they are also less inclined to see others as fair or helpful. Implied trajectories can be interpreted as evidence for the passing of cultural traits across generations and for cooperation being sustained by values rather than by reputation. Moreover, East Germans are found to be more risk loving than West Germans. In contrast to trust and fairness, full convergence in risk attitude is reached in recent years.

JEL Classification: P51, Z31
Keywords: social trust, risk attitudes, political regimes, German reunification

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1 Introduction

Twenty years after the collapse of the Soviet system, there is growing interest in the long-lasting effects Communism had and still has on economically relevant notions. Following a recently established strand of mostly empirical literature (Alesina and Fuchs-Schündeln 2007, Buch and Toubal 2009, Burda 2006, Fuchs-Schündeln and Izem 2008, Redding and Sturm 2008, Süssmuth *et al.* 2010, Uhlig 2006),[1] we exploit the division of Germany after the Second World War and the reunification of East and West Germany in 1990 as a source of exogenous variation. Part of the existing literature is focused on individuals' policy preferences such as attitudes towards income redistribution or pro-state provision of services that could as well be provided by private forces (e.g., Alesina and Fuchs-Schündeln 2007). In a recent paper, Rainer and Siedler (2009) examine whether the post-reunification, democratic experience of East Germans enhances trust which has been shown to impact on a variety of economic outcomes (Knack and Keefer 1997, Alesina and La Ferrara 2002, Slemrod and Katuscak 2005). Their findings suggest that some ten years after reunification, East Germans still have the same levels of social distrust as shortly after the fall of the wall. An even more fundamental notion, as it can be seen as prerequisite for trust and altruistic cooperation, is fairness. At the individual level, it has for example been shown that selfish or greedy intentions destroy altruistic cooperation almost completely, whereas sanctions perceived as fair leave altruism intact (Fehr and Rockenbach 2003). By now, there however are only a few studies that empirically study fairness at the societal level (see, e.g., Zak and Fakhar 2005). To our knowledge, none of them analyzes the notion of fairness in the context of the German reunification process.

We add to this literature (i) by re-examining the East-West trust gradient, (ii) by analyzing the effects on individuals' risk attitudes and their persistence as well as (iii) by studying the differences in the perception of others being fair and helpful and their persistence over time. Our hypotheses are derived from a model of German reunification

[1] While Redding and Sturm (2008) rely on the division of Germany as central source of exogenous variation, we rather follow the other studies in that our focus is on German reunification and reintegration.

that incorporates individual responses both to incentives and to values inherited from earlier generations as recently suggested by Tabellini (2008b). In contrast to Rainer and Siedler (2009), who use repeated cross-sectional data, but similar to Alesina and Fuchs-Schündeln (2007), we use data from the German Socio-Economic Panel, which allows accounting for intra-personal correlation over time.

Our results indicate that despite almost twenty years of German reunification, East Germans show a persistently lower level of social trust, which holds controlling for a wide range of socio-demographic and contextual characteristics as well as across various estimation approaches. They also continue to believe less that other people are fair or helpful. However, the patterns for these outcomes turn out to be somewhat less robust than our findings on trust. With regard to testing the model synthesizing incentives and inherited value systems, these results lend support to the passing of cultural traits across generations and for cooperation being sustained by values rather than by reputation. In line with recent evidence (see, e.g., Bonin *et al.* 2009), we also find East Germans to be more risk loving than their West German counterparts which again holds for an ample range of robustness checks. In contrast to trust and fairness, however, risk attitudes converge in the "two Germanies." In sum, while we find evidence for a persistent social distrust and scepticism in fairness of East Germans that notably is either not converging or converges very slowly to the West German level over the last decade, risk attitudes do converge. However, contrary to common belief the latter path of convergence is a trajectory from a relatively higher preference for risk among East Germans to the more risk averse attitude prevalent among West German individuals. We ascribe this finding to path dependence as the evolution of a general notion of risk aversion at the societal level requires a democratic experience and system where public deliberation plays a crucial role in evaluating risk (Laidi 2010).

Inspired by the findings of Alesina and Fuchs-Schündeln (2007) and particularly Rainer and Siedler (2008) that East Germans more likely favor state interventions, we run additional cross-sectional exercises and examine whether being raised under a highly rigid communist regime known as the German Democratic Republic (GDR) correlates

with respondents' attitudes towards progressive taxes but also with their external locus of control, i.e. individuals' beliefs that the actions of external forces are dominant for their lives' circumstances as well as with their propensity to reciprocate. The results from these exercises indicate that (i) East Germans, and particularly so East Germans who did not move west after reunification, are more in favor of redistribution than their West German counterparts. (ii) Even 15 years after reunification, East Germans have a higher external locus of control than their West German counterparts, which again, is more prevalent for those Easteners who did not relocate to former West Germany.

The rest of the paper is organized as follows. Section 2 gives an account of the historical background and summarizes the existing literature. In Section 3 the theoretical model is outlined. Central testable implications are derived. Empirical evidence is reported and discussed in Section 4. Finally, Section 5 concludes.

2 Historical background and existing literature

In the aftermath of World War II, a population of 19.1 million lived in the Soviet zone that officially became the GDR in 1949. About one sixth of these individuals emigrated into the Federal Republic of Germany (FRG) before the Berlin Wall was built in 1961.[2] In the following decades the Socialist Unity Party (*Sozialistische Einheitspartei Deutschland* – SED) established a repressive one-party communist system that lasted until the peaceful revolution of 1989 and official reunification in 1990. Confined by the Iron Curtain only about 600,000 people emigrated from East to West by 1988. This 3.6 million East-West migrants contrast with just around 30,000 people per year emigrating from West to East in the 1950s, and almost no West-East migration after 1961.

Since reunification former GDR residents have experienced life in a market-based

[2]For sources of migration figures see Alesina and Fuchs-Schündeln (2007, p. 1510). Another concise historical background of the division of Germany, highlighting the implied cut through regions of prewar Germany that had been integrated through several centuries, can be found in Redding and Sturm (2008, pp. 1770-1771). It also gives an account of the sparse migration flows between East and West Germany after the division of Germany.

democracy that FRG residents experienced since 1945. During the division period West Germany was populated by about 250 inhabitants per square kilometer with a share of foreign nationals of approximately 6-10 percent. Immigrants to the FRG originated from a range of countries with diverse cultural backgrounds. The majority of them were guest workers immigrating from Turkey, followed by former Yugoslavia, Italy, and Greece. In contrast, the population density in the GDR was roughly 150 inhabitants per square kilometer with a Slavonic minority of 40-60 thousand Sorbians and a negligible share of foreign nationals.

About 20-30 percent of the current German population has been born and grew up in the GDR. These individuals experienced one of the most rigid regimes of the former communist block. East Germans were governed by a communist regime that severely and systematically violated the basic rights of its citizens over several decades. Given that the sparse freedom that people had was further undermined by the GDR's Ministry of State Security's (*Ministerium für Staatssicherheit* – MfS) secret service *Staatssicherheit* alias "Stasi," one could actually argue that it was the most rigid regime of the former communist block. Rainer and Siedler (2009, pp. 251-252) quantify the societal infiltration and climate of mistrust in the following way referring to Koehler (1999) as central source for figures: "The Stasi kept files on an estimated six million people, and built up a network of civilian informants ('unofficial collaborators'), who monitored politically incorrect behavior among other citizens. By 1995, 174,000 East Germans had been identified as unofficial collaborators. This amounts to 2.5 percent of the total population and constitutes one of the highest penetrations of any society by a security apparatus. In fact, the ratio of 'watchers' to 'watched' was even higher than (i.e. roughly 90-times) that of the Soviet Union under communism." Other sources document an even higher penetration of society with a total of 600,000 MfS collaborators, implying on average, at least, one Stasi collaborator in every random sample of 50 citizens (Citizens' Committee 2010). Several recent documentary and non-documentary movies, one of which lending its title to the contribution by Alesina and Fuchs-Schündeln (2007) and one of which winning an Academy's Award in 2007 (The Lives of Others), characterize the suppression of

citizens by the MfS and the tremendous infiltration of society with suspicion and implied physical as well as mental violence that continued for four decades until the peaceful self-liberation of GDR citizens in 1989. The activities of Stasi full-time employees, unofficial personnel, and collaborators included the checking and censorship of personal mail, phone surveillance, and all sorts of observation and investigation disregarding any basic civic rights. The GDR system habitually imposed unfair moral choices: for example, denounce your neighbor or colleague, or your child will never go to university. It preached altruism but ingrained selfishness. Obviously, in the words of Tabellini (2008b, p. 909) there is a history of political abuse and exploitation from which citizens of the former GDR suffered, possibly echoing to the present day. The central open question therefore is whether or by how much after two decades, i.e., after one generation having grown up in a free and law-governed society, restoration of public-spiritedness, decency, and trust is completed.

Before setting up our model of German reunification, we will briefly sketch some hypotheses in the existing literature as they relate to the relationship between political system and the notions of social trust, risk attitude, and fairness.

2.1 Political system and social trust

In a recent paper, Nunn and Watchekon (2010) document the high persistency of mistrust among black Africans whose ancestors were heavily raided during the slave trade. To capture a causal effect the authors use historic proximity of ancestors to the coast of the Indian ocean and the Pacific ocean to instrument slave trade intensity. They find that even 100 years after the end of the slave trade period, the system left its traces in terms of an eroded level of social trust. Of course, we would not expect such a secular persistency of mistrust in the aftermath of the GDR system given that the slave trade period lasted for about four centuries, depriving colored individuals from basically all human rights, while the repressive surveillance-based system of the GDR existed for four decades. Therefore, when it comes to comparing West and East German individuals, we

would rather expect similar or even more pronounced evidence of a gap in social trust as reported in Tabellini (2008a) who finds that trust of second-generation U.S. citizens is higher if they came from countries that over a century ago had the better political institutions. Based on data from repeated cross-sections Rainer and Siedler (2009) find some first indications for this hypothesis to hold for the first decade after Germany's reunification, that is, for the early transition period of East Germany from a communist regime to a market-based democracy. However, to measure the (inherited) persistency of mistrust and a potential convergence of trust levels in the post-transition period, the use of panel data is preferable to relying on cross-sectional data. In the context of passing values and attitudes over generations, of course, controlling for age will be crucial. Sutter and Kocher (2007), for example, find in an experimental trust game setting that trust and trustworthiness increase more or less linearly with age.

2.2 Political system and risk attitude

Similar to trust that is found to be –if at all– poorly explained by the self-interest-approach (Fehr and Rockenbach 2003), risk aversion at the societal level is not a simple matter of rationality but rather a matter of identity. To make this point Laidi (2010) provocatively states that even North Korea weighs the costs and benefits of launching missile strikes on Japan. But what is it that makes a society risk averse (in a rather wide sense) going beyond the slogan of a country being a "soft power?" The answer given by Laidi (2010) is that the evolution of a general notion of risk aversion at the societal level requires a democratic experience and a system where public deliberation plays a crucial role in evaluating risk. In analogy to the First Amendment, freedom of opinion in the FRG is guaranteed in Article 5 of its Basic Law (*Grundgesetz*), i.e., its post-war constitutional law that was formally approved on 8 May 1949, and, with the signature of the Western Allies, came into effect on 23 May 1949, as the constitution of West Germany. Today the *Grundgesetz* represents the constitution of reunified Germany. Article 5 comprises freedom of speech and freedom of press. It explicitly interdicts censorship. In contrast, the GDR witnessed a constitution that successively eroded the freedom of

opinion from its first version of 1949 to its proceeding versions of 1968 and 1974, which officially set the state in its Article I under the leadership of its one and only party, the Marxist-Leninist party (SED). It cleared the way for all sorts of uncritical propaganda. While the Prague Spring period of political liberalization and the 1968 reform movement in Czechoslovakia did not show substantial contagious effects in the GDR, FRG citizens at the same time witnessed a broad societal protest movement against perceived authoritarianism and hypocrisy of the German government and other Western governments. In the following decades and in particular with the birth of the West German Green Party (*Die Grünen*) in the early 1980s, effectively extending the political arena to a four party competition, external concerns of the public like the threat through medium-range missiles or, in general, the arms race in the course of the cold war were extensively discussed and a democratic demonstration culture established. These forms of public deliberation also applied to internal concerns like the danger of nuclear plants accidents or genetically modified organisms. In contrast, before the "Monday Demonstrations" of the late 1980s that initiated the collapse of the GDR comparable debates of internal and external concerns of society existed only in the scattered and merely existent underground but not in the public sphere.

A perspective that is at first sight at odds with the above line of argumentation can be found in a recent and rather macroeconomic strand of literature that is concerned with financial risk taking and the development of respective attitudes. It comes up with another reasoning regarding the nexus of personal or collective experience and risk attitude. For example, it suggests that individuals who had an experience of a large macroeconomic shock like the Great Depression show a long-lasting effect on their attitudes towards risk due to this experience ("depression babies"). An overview of this literature is given in Malmendier and Nagel (2009). According to this literature, it is, in particular, personal financial risk experience that shapes one's preferences towards risk. Given that planned economies, in general, failed to attenuate macroeconomic shocks and showed similar business cycle patterns as market economies (Hillinger 1992), we would expect no substantial difference in risk attitude. However, we should keep in mind that macroeconomic shocks

were experienced quite differently in the two systems. The GDR's collectivist social planner's state, for example, virtually guaranteed full employment, making it unnecessary for citizens to insure against unemployment. In this context, insurance through free capital market instruments, represented by a vast diversity of stock market vehicles, can be seen as an experience good or service in the sense of Nelson (1970). Interpreting (financial) risk aversion in this way, we would also expect former GDR citizens to be characterized by a relatively lower level of risk aversion compared to West German individuals whose attitude evolved over decades of repeated (positive) experience with capital market instruments in insuring against macroeconomic shocks. This line of reasoning is restricted to the financial aspect of risk aversion. It does not apply to a more general notion of risk attitude.

Using the "all reset button" experiment of German reunification our study can shed some light on whether the default level of (the general notion of) risk attitude actually is the more risk loving or the less risk loving attitude compared to the one prevalent in an established market economy. This question is regardless of the reunification process interesting in itself as we can make the point for either default level. Following the literature cited above, we can interpret risk aversion as the outcome of a learning process. Accordingly, the default level is the relatively more risk loving one. An intuitive example is a toddler playing on the edge of a cliff. However, from anthropology we know of relics from cavemen times like the state of being paralyzed with shock in the case of an unexpected threat that speak in favor of a relatively more risk averse default level.[3]

2.3 Political system, fairness and value systems

As argued in Fehr and Rockenbach (2003), fairness is, in fact, prior to trust in that it represents the deeper of the two notions, implying that social trust might be seen as the outcome of a (repeated) experience of fairness and cooperativeness. It questions the

[3]In this particular case, the relic is rooted in our front cerebral lobe. It represents an evolutionary advantage of the caveman as it was of paramount importance for survivor to stay with the herd particularly in the case of an unexpected threat (Goleman 1997).

dominant role and universality of self-interest and the implication that welfare enhancing cooperation is doomed to fail unless well defined small groups interact indefinitely (Gächter *et al.* 2010). See also Fehr and Schmidt (2006) for a recent survey of the related theoretical literature. Yet there are only a few studies that empirically study fairness at the societal level (see, e.g., Zak and Fakhar 2005). To our knowledge, none of them analyzes the notion of fairness in the context of the reunification of Germany.

A political system, in particular, in its polar form of a collectivist (GDR) or individualist (FRG) society, shapes through, among others, markets and economic institutions the cultural and socio-economic background of a society (Greif 1994, Bowles 1998). Fairness as a dominant behavioral force is found to be determined by this type of background (Guiso *et al.* 2006, Fernández 2007, Tabellini 2008a) which is identified in the literature as those sets of beliefs and values that the majority of people in a society hold and that get "transmitted fairly unchanged from generation to generation" (Guiso *et al.* 2006, p. 23). Since the "evolution of value systems is determined by initial and possibly random historical circumstances" (Tabellini 2008b, p. 909) and since the division of Germany in terms of actual borders implied quite some random element as documented, for example, in Redding and Sturm (2007), the German reunification process is a predestined natural experiment to study in this context.

3 Theoretical model

The following model draws on Tabellini (2008b), and extends it in its static version (section 3.1) and, in particular, in its dynamic version (section 3.2) to the case of two societies that evolved for some generations separately and get (re-)unified (section 3.3).

3.1 Basic comparative static model: Exogenous values

The basic model represents a one-shot matching game, where individuals are randomly matched with one another. Each individual is located at distance y with probability

$g(y) > 0$, where distance not necessarily refers to geography, but also to social or economic dimensions such as religion, ethnicity, and class.[4]

After having been matched, individuals observe their distance and play a prisoner's dilemma game including material payoffs (Figure 1).

	C	NC
C	c, c	$h-l, c+w$
NC	$c+w, h-l$	h, h

Figure 1. Prisoner's Dilemma: Material Payoffs

As usual, $c > h$ and $l, w > 0$. We follow Tabellini (2008b, p. 910) assuming that $l \geq w$, namely that the loss from being cheated is at least as large as the benefit of cheating – relative to the respective payoffs under full cooperation and no cooperation at all.

Besides these material payoffs, each individual receives a non-economic psychological benefit $d > \max(l, w)$ whenever playing C, irrespective of the strategy played by the opponent. In other words, the non-material payoffs represent a value of cooperating per se. We can interpret them as "warm glow" (Andreoni 1990). Benefit drawn from this effect decays with distance at exponential rate $\theta > 0$. Strategy C, therefore, generates a non-economic benefit that amounts to $de^{-\theta y}$. Thus, parameter θ can be interpreted as the rate at which non-economic benefits decay with distance y, relative to the economic payoffs. This feature of the model captures the idea that norms of good conduct apply particularly strong within a circle of socially connected individuals (e.g., relatives and nuclear circle of friends), and less so with less familiar individuals (strangers).

There are two players $k = 0, 1$. Both enjoy the same benefit d of cooperating, but differ in the rate at which the benefit decays with distance, θ^1 and θ^0, with $\theta^0 > \theta^1$. Tabellini (2008b) refers to the two types as trustworthy (if $k = 1$) and not-trustworthy

[4]We find a similar idea in the quantitative political economy literature on spatial power indices, where space refers to ideological space; see, e.g., Barr and Passarelli (2009).

(if $k = 0$), because for any positive distance a trustworthy player values cooperation more than a not-trustworthy player. Individuals observe distance y, but not trustworthiness of the other party. The fraction of trustworthy ($k = 1$) types in the population is the same at any point in a uniformly distributed continuum of one-period lived individuals. This fraction n is for the moment assumed to be a fixed parameter n with $1 > n > 0$. It is endogenized in the dynamic version of the model. In the context of the division of Germany, we can inversely interpret $1 - n$ as the number of players who strictly adhere, irrespective of private spheres and a potential warm glow, to the guidelines of the system and play *NC*. In the GDR system this type of behavior corresponds to toeing the party line of the socialist unity party.

Let $\pi(y)$ denote the probability that the opponent player will choose C, such that the expected payoff from playing *NC* rather than C is $\pi(y)\, w$ plus, in terms of an avoided loss, $[1 - \pi(y)]\, l$. Therefore, we can express a player's "sucker's payoff" as

$$T(\pi(y)) = l - \pi(y)(l - w) > 0. \tag{1}$$

Given that $l \geq w$, function $T(\pi(y))$ is non-increasing in $\pi(y)$, the probability that the opponent will play C, and strictly decreasing in $\pi(y)$ if $l > w$. Intuitively, if $l > w$, the loss of being cheated is greater than the benefit of cheating, implying that the temptation to cheat is greater if the opponent is also more likely to cheat (i.e., $T(\cdot)$ is strictly decreasing in π). This feature represents an inherent strategic complementarity of the game. Every player is weighing this temptation up against the non-economic benefit of cooperation, $de^{-\theta^k y}$, which depends on a player's type. Therefore, indifference between playing C or *NC* is given for

$$T\left(\pi\left(\widetilde{y}^k\right)\right) = de^{-\theta^k \widetilde{y}^k}. \tag{2}$$

Using (1), taking logs of (2), considering $\ln\left[l - \pi\left(\widetilde{y}^k\right)(l - w)\right] = \ln\left[l + \pi\left(\widetilde{y}^k\right)(w - l)\right]$, we can solve for $\widetilde{y}^k$ to obtain

$$\widetilde{y}^k = \left\{\ln d - \ln\left[(w - l)\,\pi\left(\widetilde{y}^k\right) + l\right]\right\}/\theta^k. \tag{3}$$

Holding π constant, $\widetilde{y}^k$ defines a threshold, inasmuch individual k prefers to play C in a match with someone at distance $y < \widetilde{y}^k$, while k prefers to play *NC* if $y > \widetilde{y}^k$. If $l > w$,

the right-hand side of (3) is increasing in $\pi(y)$. There are multiple equilibria. We follow Tabellini (2008b) by concentrating only on the Pareto superior equilibrium that sustains maximal cooperation. Next, consider a not-trustworthy player, $k = 0$, and suppose that the opponent is always expected to cooperate, i.e., $\pi(y) = 1$. In this case (3) reduces to

$$Y^0 = (\ln d - \ln w)/\theta^0. \tag{4}$$

Player $k = 0$ finds it optimal to cooperate up to distance $y \leq Y^0$ and to play *NC* if $y > Y^0$. Up to distance $y \leq Y^0$ a trustworthy player also plays *C*, because a higher non-economic benefit from cooperation is given. For $y > Y^0$, however, the good player realizes that all the not-trustworthy players will play *NC*. The trustworthy player's most optimistic expectation is that only trustworthy type opponents cooperate. Being matched with such an opponent happens with probability n. Inserting $\pi(y) = n$ in the right-hand side of (3), we obtain

$$\widetilde{y}^1 = \{\ln d - \ln[(w - l)n + l]\}/\theta^1. \tag{5}$$

If $\widetilde{y}^1 > Y^0$, a trustworthy player finds it optimal to cooperate up to $\widetilde{y}^1$, given that all other trustworthy players are expected to also cooperate; beyond this threshold this type of player prefers to play NC. If instead $\widetilde{y}^1 \leq Y^0$, then (given the expectation that everyone cooperates up to Y^0), such a player also prefers to play *C* up to Y^0, but not beyond. Thus, in equilibrium, the upper threshold of cooperation for a trustworthy player is

$$Y^1 = \max\left(\widetilde{y}^1, Y^0\right). \tag{6}$$

Note that $Y^1 \geq Y^0$, with strict inequality if n is sufficiently large, or if the two types are sufficiently different from each other. To see this, consider that Y^1 increases with $\widetilde{y}^1$ irrespective of Y^0 according to (6).

Proposition 1 $\frac{\partial Y^1}{\partial n} > 0$ *until* $Y^1 \geq Y^0$.

Proof. See Appendix A. ■

So far, we have derived a lower (Y^0) and an upper (Y^1) threshold for cooperativeness, that is, $[Y^0, Y^1]$ define the scope of cooperation in nearby or more distant matches. The

model is driven by an information externality, as good players bear the risk of cooperating against an unreliable opponent due to individuals being unable to observe their opponent type. The increasing effect of n on Y^1 reflects the strategic complementarity in the prisoner's dilemma game. Given $l > w$, individuals are more willing to cooperate the higher is the probability that their partner will also cooperate. With regard to a communist system, this strategic complementarity can be interpreted in the following way: If a system succeeds in raising the number of individuals $1 - n$ who are true to its principles, it simultaneously fosters the collectivistic attitude of people who are already blindly loyal to the system.

In the context of Germany's division and reunification, a decreasing cooperativeness with increasing $1 - n$ is a central testable implication: The share of not-trustworthy individuals in a society $1 - n$ can be exogenously increased by a repressive political regime as was the case in the GDR due to every day life infiltrating activities of Stasi (secret state's police) collaborators and the hiring and networking of civilian informants.

3.2 Dynamic model: Endogenous values

As noted earlier the idea is to endogenize n by modeling how parents rationally choose what values to transmit to their children dependent on economic incentives as well as other features of the environment. Whether a given individual is of type $k = 0$ or 1 is due to either "nature or nurture," where the latter is determined by the external environment and/or the parental education effort. Parents are altruistic and care about the utility of their offspring, but evaluate their kids' expected welfare with their own preferences. This assumption of "imperfect empathy" (Tabellini 2008b, p. 916) implies that some parents devote effort to try and shape the values of their children to resemble their own.

Consider an infinite economy, where agents live two periods. In the first period, they get educated by their parents. After completion of education, agents become themselves players in the game described above. In the second period, each individual is the parent of a single kid and the parent's only activity is to educate the respective offspring. Parental

education increases the probability that the kid becomes trustworthy ($\theta^k = \theta^1$), but is costly for the parent. Educational effort f is chosen by each parent before observing a kid's type of value system. The probability of having a trustworthy kid does not depend on the parent's type. The impact of "nature and nurture" is denoted by δ and f, respectively. Given effort $f \geq 0$, the kid turns out to be trustworthy ($\theta^k = \theta^1$) with probability $\delta + f$, and unreliable ($\theta^k = \theta^0$) with probability $1 - (\delta + f)$, where $1 > \delta > 0$. Letting V_t^{pk} denote the parent's p evaluation of the respective kid's overall expected utility in the equilibrium of the matching game at period t for $k, p = 0, 1$, we can write for a matched pair with distance z:

$$V_t^{pk} = U_t^k + d \int_0^{Y_t^k} e^{-\theta^p z} g(z)\, dz, \tag{7}$$

where $U_t^k = U\left(\theta^k, n_t\right)$ denotes the expected equilibrium material payoffs of a kid. Together with the parent's evaluation of the kid's expected non-economic benefit of cooperating in matches of distance smaller than Y_t^k it makes V_t^{pk}. If $\theta^p \neq \theta^k$, p and k have different values, and V_t^{pk} differs from the kid's own evaluation. Tabellini (2008b, p. 918) summarizes the intuition behind this element of the model as follows: "[P]arents express a value judgment on their kids' actions, and values are not randomly chosen to suit one's tastes. They reflect deeply held convictions about religious or moral principles, or beliefs about the long-run consequences of alternative patterns of behavior that likely apply to everyone ... [V]alues are not the same thing as preferences. Parents are likely to be convinced that what is 'right' for themselves is also 'right' for everyone else, and in particular for their kids."

The fraction of trustworthy players in each period, n_t, evolves endogenously over time according to the following fundamental law of motion

$$n_t = n_{t-1}(\delta + f_t) + (1 - n_{t-1})\,\delta = \delta + n_{t-1} f_t, \tag{8}$$

where f_t now exclusively denotes effort by a good parent. If parents exert no effort, the average fraction of trustworthy kids in the population equals δ. In period t, the fraction of trustworthy parents n_{t-1} exerts educational effort f_t, which in turn increases the fraction of trustworthy kids in the population by $n_{t-1} f_t$ on average. The parents' optimal

choice of educational effort implies $f_t > 0$. Recalling $\delta + f_t$ is denoting a probability, it follows that $1-\delta \geq f_t$. Furthermore, f_t can be shown to be a known function$f_t = F\left(Y_t^1\right)$ that is strictly increasing in Y_t^1. This implies a second strategic complementarity. If parents expect others to put more effort into education, they anticipate that the fraction of trustworthy players will increase. They realize that this will expand the scope of cooperation Y_t^1 and increase educational effort. This central feature of the model produces a certain inertia: A high starting level of trustworthiness in a society (n_0) can be sustained just as well as a low starting level for several generations. The educational game behind is supermodular (Tabellini 2008b, pp. 921-922). To derive the equilibrium and steady state, the equilibrium vector (Y_t^{1*}, n_t^*) is defined to solve

$$Y_t^1 = \left\{\ln d - \ln\left[\left(w-l\right)n_t + l\right]\right\}/\theta^1 \equiv Y\left(n_t\right) \tag{9}$$

$$n_t = \delta + n_{t-1}F\left(Y_t^1\right) \equiv N\left(Y_t^1, n_{t-1}\right). \tag{10}$$

The first of these two equations defines the maximum distance Y_t^1 that sustains cooperation by trustworthy players as a function of the fraction of other trustworthy players. It is strictly increasing and convex in n_t if $l > w$. The second equation defines the law of motion of the fraction of trustworthy players. As Y_t^1 increases, trustworthy parents are induced to put more effort into changing their kid's values due to the second strategic complementarity in the model. Hence, function $n_t = N\left(Y_t^1, n_{t-1}\right)$ is also increasing in Y_t^1. Thus, equilibrium (Y_t^{1*}, n_t^*) is a function of n_{t-1}. Setting $n_t = n_{t-1} = n_s$, a steady state is given by

$$Y_s^{1*} = Y\left(n_s^*\right) \tag{11}$$

$$n_s^* = \frac{\delta}{1 - F\left(Y_s^{1*}\right)}. \tag{12}$$

We can derive the following central testable implications that we will elaborate in more detail in the context of Germany's reunification in the next subsection:

- Individuals are more willing to cooperate the higher is the probability that their partner will also cooperate. The scope of cooperation Y_t^1 is increasing in n_t and decreasing in $(1-n_t)$, that is, in the share of trustworthy and not-trustworthy individuals, respectively. This implies $l > w$, i.e., there is strategic complementarity.

- If the first implication is found to hold, the equilibrium asymptotically reaches a steady state (Y_t^{1*}, n_t^*).

- If the first two implications are found to hold, then both Y_t^{1*} and n_t^* are time-varying, and during the adjustment to the steady state move in the same direction. The adjustment is not abrupt. There is inertia in n. It takes > 1 generation until a new steady state is reached (second strategic complementarity).

3.3 Trust, scope of cooperation and German Reunification

Consider two societies, East (E) and West (W), that developed a scope of cooperation over several decades independently of each other according to the above outlined model, i.e., $\left(Y_t^{1*^E}, n_t^{*^E}\right)$ and $\left(Y_t^{1*^W}, n_t^{*^W}\right)$. The respective steady states are depicted as the two points of intersection in Figure 2. Obviously and intuitively, $n_t^{*^W} > n_t^{*^E}$, due to the above discussed repressive nature of the GDR (denoted by superscript E), a police state, where citizens were not only surveilled and scrutinized but also controlled by the underlings of the regime recruited from fellow citizens. That is, the share of trustworthy persons in W is higher than the one in society E. Next, consider fundamental equation (8) for a consecutive sequence of periods (i.e., generations), where reunification happens to take place in t, $\delta \in (0,1)$, $1-\delta \geq f$ due to the fact that $\delta + f$ represents a probability, I^j for $j = W, E$ denotes inhabitants in East and West, and R denotes re-unified Eastern part of Germany (*Neue Bundesländer*):

$$
\begin{aligned}
t: \quad & n_t^E && = n_{t-1}^E \left(\delta + f_t\right) + \left(1 - n_{t-1}^E\right)\delta = \delta + n_{t-1}^E f_t \\
t+1: \quad & n_{t+1}^R && = \delta + \tfrac{1}{I^W + I^E}\left(I^W n_t^E + I^E n_t^W\right) f_{t+1} \\
& && = \delta + \tfrac{1}{I^W + I^E}\left[I^W\left(\delta + n_{t-1}^E f_t\right) + I^E n_t^W\right] f_{t+1} \\
t+2: \quad & n_{t+2}^R && = \delta + n_{t+1}^R f_{t+2}
\end{aligned}
$$

$$= \delta + \left\{\delta + \tfrac{1}{I^W + I^E}\left[I^W\left(\delta + n_{t-1}^E f_t\right) + I^E n_t^W\right] f_{t+1}\right\} f_{t+2}$$

$$t+3: \quad n_{t+3}^R = \delta + n_{t+2}^R f_{t+3}$$
$$= \ldots$$

Clearly, n_{t-1}^E, i.e., the share of trustworthy individuals in the former GDR has a sustained impact on the share of trustworthy individuals even several generations after reunification. However, this impact has a decaying weight due to $f < 1$. In the period of reunification, the East German society moves out of its original steady state due to the exogenous decrease in the overall fraction of not-trustworthy fellow citizens. This induces a second round effect as East German parents now expect other East German parents to put more effort into educating a trustworthy offspring. They anticipate that due to this effect the fraction of trustworthy players will further increase and they realize that this will expand the scope of cooperation Y_t^{1E}. By increasing, both n^E and Y^{1E} move in the same direction towards the West German steady state levels $\left(Y_t^{1*^W}, n_t^{*^W}\right)$.

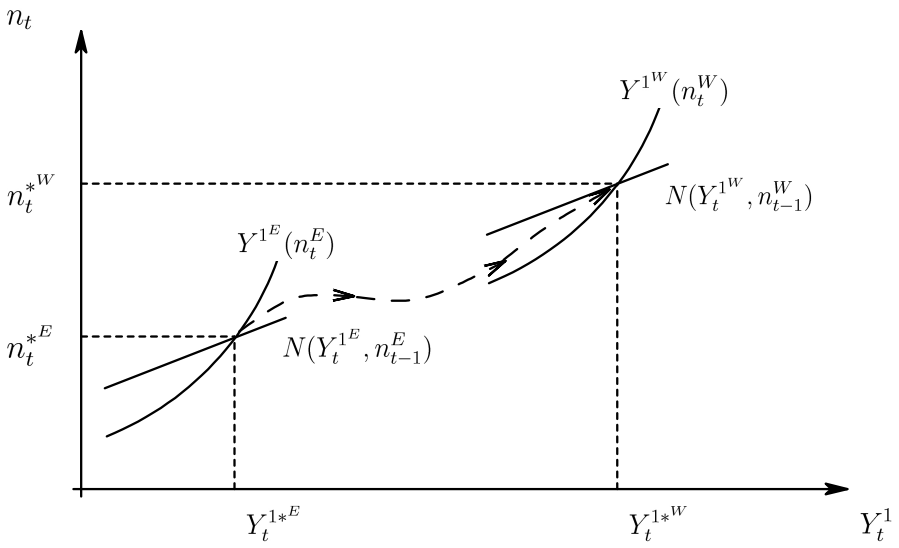

Figure 2. Trajectory of convergence into new equilibrium I

This is shown in Figure 2. Whether the transition to the new steady state is smooth or perturbed, as suggested, for example, in Süssmuth *et al.* (2010), is unclear as indicated by

the dashed line arrows. If we apply the model symmetrically to West German parents and kids and follow the same argumentation as above with opposite signs, a self-reinforcing downward spiral is triggered because of the second strategic complementarity. However, as $I^W > I^E$, the downward movement of the West German steady state level towards a steady state for the reunified society is less pronounced than the self-reinforced upward tendency in the scope of cooperativeness and in the number of trustworthy individuals of East Germans. The corresponding trajectory of convergence is shown in Figure 3.

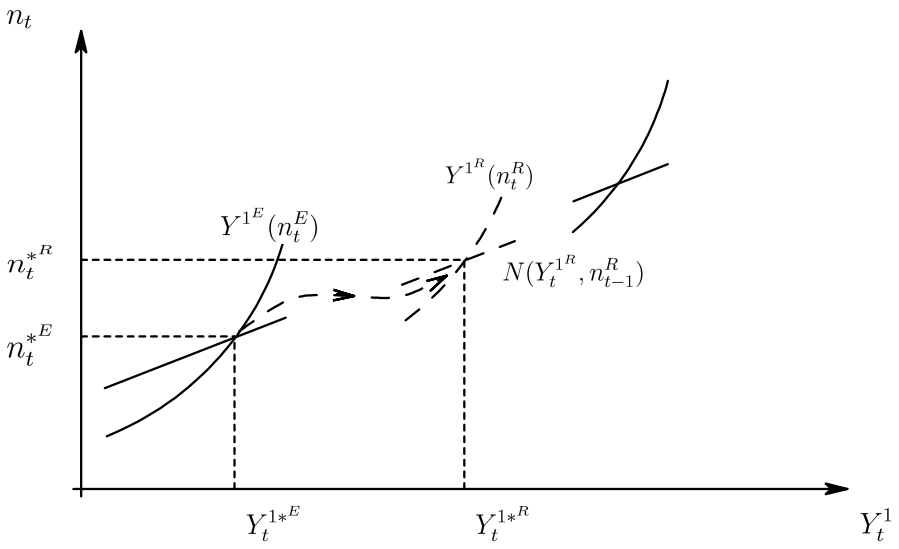

Figure 3. Trajectory of convergence into new equilibrium II

4 Evidence

4.1 Data and empirical approach

Alike Alesina and Fuchs-Schündeln (2007), we use data from the German Socio-Economic Panel (SOEP). The SOEP is a representative longitudinal database that was first administered in former West Germany in 1984 and was extended to East Germany in spring 1990, i.e. about half a year after the fall of the wall in 1989 and only a couple of months before formal reunification in October 1990 (cf. Wagner *et al.* 2007). We are thus able

(i) to identify individuals who lived in the former GDR before reunification and (ii) to follow them over time. This last feature is a particular benefit since it allows examining intra-individual changes in measures of trust, fairness, and cooperativeness as well as in risk attitude.

In 2003 and 2008, the SOEP asked respondents about social trust as well as their perceptions of others being fair or cooperative. Social trust is surveyed as responses to *"What is your opinion on the following three statements?"*, the items being: (A) *"On the whole one can trust people"*, (B) *"Nowadays one can't rely on anyone"*, and (C) *"If one is dealing with strangers, it is better to be careful before one can trust them."* Responses are given on a Likert-type ordinal 4-point scale, ranging from 1 *"totally agree"* to 4 *"totally disagree"*. To ease interpretation, responses from the three items are each collapsed into a binary indicator which takes on value one if the respondent is a trusting one, i.e. if he or she totally agrees with the first statement, or in the case of (B) and (C) totally disagrees with either of these two other statements. This might seem a loss of information, but additional ordered probit estimations do not yield substantially different results.[5] There are two further points to note with regard to these survey questions. First, item (B) is not a static statement. It has some backward looking dimension as it requires respondents to compare the situation today with the past. Secondly, item (C) asks about an assessment of the trustworthiness of strangers. It is noteworthy that this group of strangers usually refers not only to individuals who are not socially connected to the respondent but also comprises foreign nationals.

Perceived fairness in the society is surveyed by *"Do you believe that most people ..."* (A) *"would exploit you if they had the opportunity"* or (B) *"would attempt to be fair towards you?"*. Our –again binary– fairness variable equals one if the respondent approves the latter statement.

Similarly, the binary *"people are cooperative"* indicator is generated from the responses to *"Would you say that for most of the time, people ..."* given by (A) *"attempt to be*

[5]Detailed results from ordered probit estimates are available on request from the authors and will be made available in an accompanying online appendix.

helpful?" or (B) *"only act in their own interests?"*. Approving the first statement induces value one in our variable.

Individuals' risk attitudes were first measured in 2004, with a general risk attitude item as well as context-specific risk attitudes, such as risk-taking in financial matters, in sports, or in health, and another risk measure derived from a hypothetical lottery scenario. To be able to examine the development over time, we however use the general risk attitude scale since it is only this indicator that is re-measured in 2008.[6] The questions in both waves of the survey read *"Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?;"* the scale of responses runs from 0 *"risk averse"* to 10 *"fully prepared to take risks."* We employ least squares estimation for this variable as, again, results from ordered probit estimations are not substantially different from the ones we present below (see footnote 5).

In addition, we extend our analysis by looking at individuals' attitudes towards income redistribution. This exercise repeats and adds to the one by Rainer and Siedler (2008). While they control for Easterners, their focus is on the impact of individuals' perceptions of occupational upward mobility on preferences for redistribution. We add to their approach relaxing their age limit and thus employing a larger sample, as well as including a larger set of controls out of which the dummy on whether an East German respondent moved to West Germany after reunification deserves our interest. Since it is plausible to assume that moving is caused by the better economic conditions in the Western federal states,[7] this coefficient captures the learning process the respondent is subject to: Adjusting his or her budget constraint by increasing income should thus alter the perception of the 'fairness' of the taxation scheme. To assess the attitude of SOEP respondents towards progressive taxation, the following questions were asked: (A) *"Is the amount of taxes paid by an unskilled worker in Germany too much compared to other*

[6] In their experimentally validated study of individual risk attitudes based on SOEP data, Dohmen *et al.* (2005) document a substantial, and significant positive correlation between measures of context-specific and general risk attitude.

[7] In 2005, the unemployment rate in the former FRG was at 10.1% whereas it was at 18.3% in the former GDR (Reinberg and Hummel 2007).

groups, too little, or exactly appropriate?" and (B) *"And what do you think about the taxes paid by a manager on the board of directors of a large company? Does he/she pay too much, too little, or an exactly appropriate amount of taxes compared to other groups?"*. Again, we recoded (A) and (B) into an ordered gradient. Note that these items were surveyed only once in 2005, so that we can get a cross-sectional picture only. However, these cross-sectional estimates are intended to gleam a greater picture by complementing the overall results from our longitudinal analyses.

Our baseline specifications are linear probability models accounting for random effects (RE-LPM) of the following form

$$y_{it} = \mu + x'_{it}\beta + \gamma EastGerman_i + \alpha_i + \epsilon_{it}, \tag{13}$$

where $y = (\text{trust} \mid \text{fairness} \mid \text{cooperativeness} \mid \text{risk})$, and x denotes covariates comprising the socio-demographic characteristics sex, age (specified as a cubic function), educational attainment, current employment status, employment history (yrs. of full-time/part-time employment or unemployment), household income, marital status, number of children, health status, and - in order to account for childhood and teenage circumstances - parental education, parental religion, the size of the place the respondent lived at until the age of 15, and further whether he or she still lives in his or her childhood hometown. Moreover, we capture intra-German variation by including the following contextual characteristics at the federal state level: Gini coefficient, unemployment rate, GDP p.c., rate of solved crime cases, expenditure for education, and proportion of foreigners. A detailed summary statistics of variables is given in Appendix B. Throughout all our estimates, LM tests imply the rejection of the null: $Var(\alpha_i) = 0$, confirming our RE specification. Samples that combine the waves of 2003 and 2008 (trust, fairness, cooperativeness) cover 31,707 observations for 19,998 persons. The number of observations for the sample that combines the waves of 2004 and 2008 (risk) is 32,196 for 19,431 persons.

4.2 Findings and discussion

4.2.1 Trust items

Table 1 reports our RE-LPM estimates for the different trust items as described in Section 4.1. For all specifications (1) to (6), we estimate a statistically significant negative coefficient for individuals who experienced the GDR system (East German), suggesting a still existent relatively lower level of trust prevalent among this group of individuals. In all even specifications (2), (4), and (6), we also consider a potential effect from moving to West Germany after reunification. We expect these respondents to show a relatively higher level of trust compared to individuals who did not move to the West as it is plausible to assume that either trust fosters migration or migrating forces to trust. Apart from the trust towards strangers,[8] the estimates reported in Table 1 support this hypothesis. Yet, in terms of size, an East-West gap remains and increases throughout, meaning that the East-West differentials are even larger for those East Germans who did not migrate after reunification.

The central coefficient estimate to assess East-West convergence as described by the model outlined in the preceding section is the interaction term of East German background and the ending year of our analysis 2008 (EGerman*08). As can be seen from estimates of specification (2) to (6) in Table 1, there is convergence for the item capturing the assessment of the overall trustworthiness of other people (Can trust people) and perceived trustworthiness of strangers (Careful with strangers). In the case of the former, the trust measure increases even if we difference out subjects who moved to the West. All other things being equal, the estimates of specification (2) can be read in the following way: Starting from an East German trust level of -0.065, every year, that is, four times up to 2008, a term of $+0.016/4$ is added. According to this stylized calculation of a convergence trajectory (cf. Alesina and Fuchs-Schündeln 2007), full convergence of this trust item between East and West German individuals will be reached in one decade

[8] As noted earlier the statistical insignificance of the "Moved West" coefficient in the assessment of the trustworthiness of strangers might be the product of bias due to the fact that the group of "strangers" is not clearly defined and, among others, also comprises foreign nationals.

from now, that is, in 2020. This finding is clearly in line with theoretical predictions given in Section 3 and, in particular, also with the prediction of a possibly substantial inertia in the passing of trust as a cultural value across generations. It is also this measure among the three analyzed trust items that comes the closest to the general notion of trust underlying the model of Tabellini (2008b) and its application to the case of German reunification outlined in Section 3.

Table 1. Basic Random Effects LPM estimates: Trust items (dependent)

	Can trust people		Can't rely on anyone		Careful with strangers	
	(1)	(2)	(3)	(4)	(5)	(6)
East German	-0.030***	-0.065***	-0.034***	-0.063***	-0.039***	-0.050***
	(0.008)	(0.012)	(0.010)	(0.014)	(0.011)	(0.016)
Year 08	0.009	0.007	0.040***	0.039***	-0.005	-0.005
	(0.009)	(0.009)	(0.012)	(0.012)	(0.013)	(0.013)
EGerman*08	0.009	0.016***	-0.020***	-0.014*	0.026***	0.029***
	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)	(0.009)
Moved West	–	0.055***	–	0.046***	–	0.018
		(0.012)		(0.014)		(0.016)
Controls	+	+	+	+	+	+
R^2	0.017	0.018	0.031	0.031	0.020	0.020

Source: SOEP, 2003/08; N = 31,707

Note: ***, **, * denotes statistical significance at 1, 5, 10 percent level, respectively; robust standard errors given in parentheses."Can't rely on anyone" and "Careful with strangers" are binary variables and recoded such that value 1 does not imply distrust, but trust.

Estimated coefficients of specifications (5) and (6) imply that, other things being equal, full convergence in perceived trustworthiness of strangers is reached by 2009, that is, 20 years after reunification. Estimates of specifications (3) and (4) show that only for the intertemporal trust measure (Can't rely on anyone) there is a profound and highly significant upward tendency for East and West Germans as measured by the coefficient estimate of the Year 08 dummy. Combining estimated coefficients, it becomes evident that this upward trend is steeper for West Germans, implying again a persistent gap in the attitude of East and West German individuals. It should be kept in mind however that the statement that nowadays no one can be trusted is by far the most black-and-

white attitude assessed by respondents. It represents the most strict (or radical) of the considered measures.

In sum, regression results of our analysis of different trust items confirm that individuals who experienced the GDR system still show a relatively higher level of social distrust and scepticism. We also find that it is important to account for East-West migration. Although pointing in the same direction, our estimates suggest to carefully distinguish between different dimensions of perceived trustworthiness: The persistence of the East-West trust differential is the most pronounced for the intertemporal black-and-white measure of trust, showing virtually no convergence. It is followed by the overall trustworthiness of other people that will possibly converge some thirty years or one generation after reunification. Finally, convergence in the perceived trustworthiness of strangers is estimated to be reached in recent years, that is, less than one generation after reunification. Regarding the confirmation of theoretical predictions, our estimates employing the most general measure of trust as dependent variable confirm all testable implications of the model outlined in Section 3.

4.2.2 Fairness, cooperativeness, risk attitude

Table 2 reports RE-LPM estimates employing as dependents our measures of perceived fairness and cooperativeness as well as of individual risk attitude. As can be seen immediately from the first line of coefficient estimates in Table 2, East German individuals report lower levels of perceived fairness and cooperativeness, but are relatively more inclined to take risks. Regarding relative size of coefficients, this gap sustains even if we control for moves to the West, which seem to play a statistically significant role only in the case of cooperativeness. Accordingly, movers assess cooperativeness higher than individuals who stayed in East Germany after the fall of the wall, though still lower than West Germans.

Table 2. Basic RE-LPM estimates: Fairness, cooperativeness, risk attitude

	Fairness		Cooperativeness		Risk	
	(1)	(2)	(3)	(4)	(5)	(6)
East German	-0.034**	-0.036*	-0.018	-0.063***	0.290***	0.362***
	(0.016)	(0.021)	(0.015)	(0.021)	(0.072)	(0.105)
Year 08	0.072***	0.072***	0.072***	0.070***	0.154*	0.142*
	(0.020)	(0.020)	(0.019)	(0.019)	(0.080)	(0.080)
EGerman*08	0.001	0.002	-0.015	-0.006	-0.302***	-0.317***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.049)	(0.052)
Moved West	–	0.001	–	0.072**	–	-0.114
		(0.024)		(0.023)		(0.113)
Controls	+	+	+	+	+	+
R^2	0.050	0.050	0.047	0.047	0.119	0.119

Source: SOEP, 2003/04/08; N = 31,707; 32,196

Note: ***, **, * denotes statistical significance at 1, 5, 10 percent level, respectively; robust standard errors given in parentheses. "Fairness" and "Cooperativeness" are binary variables representing whether the respondent perceives others to act fair or to be helpful.

Another striking result is that we find no significant East-West convergence of either perceived fairness or cooperativeness between 2003 and 2008, while risk attitudes fully converged before the end of the second decade after reunification. The latter finding is straightforwardly explained by the learning process described in Section 2.2. In fact, it is suggestive for a relatively short period of learning and adjustment to a more risk averse attitude taking the time of about 1.5 to 2-times the length of an average business cycle. But how can the finding of no convergence in fairness and cooperativeness be reconciled with our theoretical model in Section 3? The answer is a low elasticity with which the upper bound of the scope of cooperation (Y^1) reacts to an increase of trust, i.e. to an increase in the number of trustworthy individuals in the society. Figure 4 makes the point. As in Figure 2 and 3, the steeper of the two respectively intersecting functions represents Y^1, while the flatter one shows N (see equations 9 and 10). If cooperativeness reacts only weakly to an increase in trust, Y^1 is fairly steep. As trust increases, the initial (bold lines) East German steady state (E_0) relocates as the number of trustworthy individuals n increases exogenously after reunification. The shift along the

ordinate is further amplified by the second strategic externality due to parents adjusting values and passing them to their offspring. A new steady state level of trust for reunified Germany is reached (n_R^*).

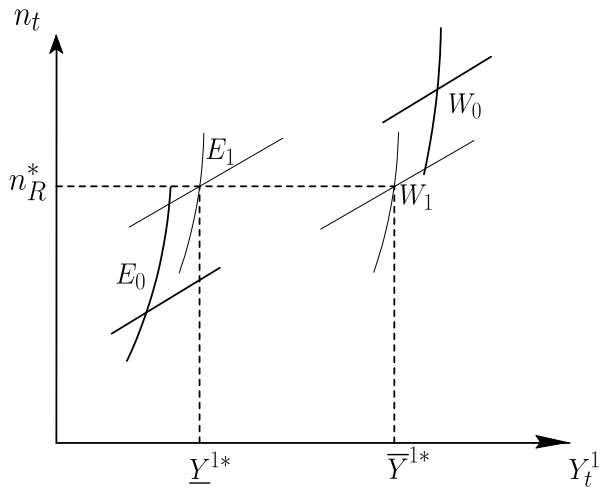

Figure 4. Convergence in trust – (nearly) no convergence in cooperativeness

However, although there is a profound convergence along the ordinate, the effect on cooperativeness is small given a low elasticity with which Y^1 reacts to an increase in n. Technically, this elasticity is low when l and w are close in value (see Appendix A), that is, when the loss from being cheated in the prisoner's dilemma game is nearly the same (or only slightly larger than) the benefit of cheating. Intuitively, this circumstance makes it hard for individuals to discriminate between a matched partner playing fair and an unfair partner. As a result, there is no unique steady state in the level of cooperativeness in reunified Germany, i.e., $Y_R^{1*} \in \left[\underline{Y}^{1*}, \overline{Y}^{1*}\right]$ as shown in Figure 4. This explains both of our findings: persistence in the East-West fairness and cooperativeness gap and a simultaneous convergence in trust.

4.2.3 Age effects, cohort effects, and regional variation

To analyze in more detail whether the duration of living in the repressive East German system has left an imprint on our social and risk attitude measures for easterners, we run additional regressions including terms that interact the East German background (i)

with age and (ii) with cohort dummies. Results for these estimates are shown in Table 3 and Table 4.

Table 3. Further RE-LPM estimates: Age effects

	Trust 1	Trust 2	Trust 3	Fairness	Cooperate	Risk
	(1)	(2)	(3)	(4)	(5)	(6)
East German	-0.064***	-0.080***	-0.074***	-0.056*	-0.038	-0.025
	(0.013)	(0.017)	(0.019)	(0.029)	(0.028)	(0.135)
Year 08	0.007	0.039***	-0.005	0.072***	0.069***	0.138*
	(0.009)	(0.012)	(0.013)	(0.020)	(0.019)	(0.083)
EGerman*08	0.015***	-0.016**	0.027***	-0.002	-0.006	-0.349***
	(0.006)	(0.008)	(0.009)	(0.013)	(0.012)	(0.052)
Age	0.001***	0.0002	0.001***	0.002***	0.005***	-0.034***
	(0.0002)	(0.0002)	(0.0002)	(0.0004)	(0.0003)	(0.002)
EGerman*age	0.002	0.038	0.051*	0.052	-0.042	0.821***
	(0.018)	(0.023)	(0.026)	(0.041)	(0.039)	(0.186)
Controls	+	+	+	+	+	+
R^2	0.016	0.031	0.020	0.048	0.046	0.118

Source: SOEP, 2003/04/08; N = 31,707; 32,196

Notes: ***, **, * denotes statistical significance at 1, 5, 10 percent level, respectively; robust standard errors given in parentheses; Trust 1: "Can trust people", Trust 2: "Can't rely on anyone", Trust 3: "Careful with strangers"; the latter two variables are recoded such that value 1 does not imply distrust, but trust; "Fairness" and "Cooperativeness" are binary variables representing whether the respondent perceives others to act fair or to be helpful.

Our finding of a significant positive (and substantial in terms of size) interaction term for age and cohort dummy, indicating that respondents spent at least part of their adolescence behind the Iron Curtain, in the case of risk attraction is plausible. First, it is noteworthy that overall we find younger individuals to be slightly more risk loving than older ones (slope of age without interaction). Secondly, however, in the case of easterners risk willingness profoundly increases with age, i.e. with time spent in the, at least, economically less risky and widely without public deliberation of societal risk environment of the GDR (cf. the estimated coefficient of EGerman*age term in Table 3). This insight clearly reinforces our explanation of a learning process. Similarly, with regard to cohort effects (Table 4), we find statistically significant and sizable risk love

mark-ups for the top aged cohorts aged ≥ 65 years. This cohort also comprises individuals that might have a free market experience from the time before division thwarting the need to learn a risk averse attitude. However, it should be kept in mind that this group of people is of negligible size as respondents who had experienced, for example, the "golden twenties" as young adults would be in their late 90s in 2008. The corresponding significant estimates for our measure of perceived cooperativeness confirm that freeing a society's captive minds is particularly hard for adults who spent their formative years under communism. They suggest that only when the memory of totalitarian rule will wash out, communism's shadow will finally be lifted and the scope of cooperation will converge. In terms of our theoretical model, a long-term equilibrium lying right from $\underline{Y}^{1*}$ in Figure 4 will be reached.

Some regional variation at the federal state level in the East-West convergence of social and risk attitude measures is reported in Table 5. This is of interest since there has been disparity in different spheres of life in the GDR, despite the system's claim of an equal standard of living in the whole country.[9] Clearly, we do not and cannot argue that the differences in conditions as given at around reunification would still persist in 2003/4 as transfer payments from West to East have been enormous (cf. Alesina and Fuchs-Schündeln 2007), but it might still be possible that the learning process as outlined in our model above will vary across the federal states.[10] Our results imply that it is only in the region of Brandenburg where measures of social trust converged to the level of westerners. For individuals from Mecklenburg-West Pomerania, Saxony-Anhalt, and, in particular, from Saxony we even find a significant diverging tendency. However, we should interpret this result rather cautiously as there might be a substantial within-state

[9] While it, for example, was not illegal to watch West German TV, the citizens of a few areas in the GDR simply could not do so since receiving other than the official channels was technically not possible. This occured in some north-eastern parts of Mecklenburg-West Pomeriana, but it was particularly the area of and around the city of Dresden, i.e. in the eastern part of Saxony, that was consequently known as "Valley of the Clueless" ("*Tal der Ahnungslosen*"). For a recent study on the power of TV to shape personal values see Jensen and Oster (2009).

[10] We have run additional analyses using a subsample of East Germans who have never moved away from their hometown (N=10,463). This group is obviously selective, but the patterns found in the results are mainly coherent to the ones we present.

heterogeneity of regional characteristics like urbanity as is the case for Saxony.

Table 4. Further RE-LPM estimates: Cohort effects

	Trust 1	Trust 2	Trust 3	Fairness	Cooperate	Risk
	(1)	(2)	(3)	(4)	(5)	(6)
East German	-0.069***	-0.076***	-0.066***	-0.059**	-0.059***	0.199*
	(0.012)	(0.015)	(0.017)	(0.026)	(0.025)	(0.120)
Year 08	0.009	0.041***	-0.005	0.077***	0.079***	0.129
	(0.009)	(0.012)	(0.013)	(0.021)	(0.020)	(0.084)
EGerman*08	0.016***	-0.014*	0.029***	0.003	-0.007	-0.311***
	(0.006)	(0.008)	(0.009)	(0.012)	(0.012)	(0.052)
Born 1961-75	0.003	0.004	0.001	0.031	0.020	0.236***
	(0.009)	(0.011)	(0.013)	(0.020)	(0.019)	(0.090)
Born 1946-60	0.008	0.007	-0.002	0.037	0.031	0.295**
	(0.013)	(0.016)	(0.018)	(0.028)	(0.026)	(0.127)
Born 1931-45	0.006	0.011	-0.009	0.022	0.067*	0.031
	(0.016)	(0.021)	(0.023)	(0.036)	(0.035)	(0.168)
Born 1930 o.e.	0.030	0.034	-0.003	0.084*	0.134***	-0.375*
	(0.021)	(0.026)	(0.029)	(0.046)	(0.043)	(0.211)
East*61-75	0.008	0.008	0.005	0.034*	0.0002	0.030
	(0.009)	(0.012)	(0.013)	(0.020)	(0.019)	(0.092)
East*46-60	0.006	0.022*	0.021	0.009	0.013	0.059
	(0.010)	(0.012)	(0.013)	(0.021)	(0.020)	(0.096)
East*31-45	0.003	0.017	0.026*	0.039*	-0.009	0.358***
	(0.010)	(0.013)	(0.014)	(0.022)	(0.021)	(0.100)
East*30 o.e.	0.001	0.013	0.029	0.032	-0.057*	0.486***
	(0.014)	(0.017)	(0.020)	(0.031)	(0.029)	(0.142)
Controls	+	+	+	+	+	+
R^2	0.018	0.032	0.021	0.050	0.048	0.120

Source: SOEP, 2003/04/08; N = 31,707; 32,196

Notes: ***, **, * denotes statistical significance at 1, 5, 10 percent level, respectively; robust standard errors given in parentheses; Trust 1: "Can trust people", Trust 2: "Can't rely on anyone", Trust 3: "Careful with strangers"; the latter two are recoded such that value 1 does not imply distrust, but trust. "Fairness" and "Cooperativeness" are binary variables representing whether the respondent perceives others to act fair or to be helpful.

Table 5. Further RE-LPM estimates: Regional variation

	Trust 1	Trust 2	Trust 3	Fairness	Cooperate	Risk
	(1)	(2)	(3)	(4)	(5)	(6)
EB	-0.103***	-0.075***	-0.024	-0.052*	-0.048	0.400***
	(0.016)	(0.020)	(0.023)	(0.034)	(0.033)	(0.162)
MVP	-0.007	0.003	-0.030	0.016	-0.007	0.829***
	(0.020)	(0.025)	(0.028)	(0.043)	(0.041)	(0.204)
BB	-0.083***	-0.097***	-0.084***	-0.065**	-0.082***	0.626***
	(0.017)	(0.021)	(0.023)	(0.036)	(0.034)	(0.179)
SXA	0.009	0.020	-0.069**	0.014	-0.033	0.462**
	(0.021)	(0.027)	(0.030)	(0.045)	(0.043)	(0.218)
TH	0.032	0.035	-0.019	-0.014	-0.054	0.406**
	(0.020)	(0.025)	(0.028)	(0.042)	(0.041)	(0.190)
SX	-0.064***	-0.072***	-0.080***	-0.013	-0.039	0.623***
	(0.014)	(0.017)	(0.020)	(0.030)	(0.029)	(0.141)
Year 08	0.131***	0.190***	0.031	0.108**	0.187***	-0.112
	(0.022)	(0.028)	(0.031)	(0.046)	(0.045)	(0.194)
EB*08	0.023	0.001	-0.018	-0.016	-0.071*	-0.491***
	(0.020)	(0.024)	(0.027)	(0.040)	(0.039)	(0.156)
MVP*08	-0.042**	-0.047**	-0.016	-0.032	-0.050	-0.418***
	(0.017)	(0.021)	(0.024)	(0.034)	(0.033)	(0.139)
BB*08	0.039***	-0.005	0.059***	0.013	0.003	-0.460***
	(0.013)	(0.016)	(0.018)	(0.026)	(0.026)	(0.115)
SXA*08	-0.012	-0.049***	0.022	-0.036	0.018	-0.262**
	(0.013)	(0.016)	(0.018)	(0.026)	(0.026)	(0.123)
TH*08	-0.007	-0.022	0.034**	0.053**	0.053**	-0.117
	(0.012)	(0.015)	(0.017)	(0.024)	(0.024)	(0.105)
SX*08	-0.039***	-0.101***	0.024	-0.027	-0.126***	-0.194*
	(0.013)	(0.017)	(0.019)	(0.028)	(0.027)	(0.117)
Controls	+	+	+	+	+	+
R^2	0.019	0.033	0.021	0.050	0.048	0.119
Source: SOEP, 2003/04/08; N = 31,707; 32,196						

Notes: ***, **, * denotes statistical significance at 1, 5, 10 percent level, respectively; robust standard errors given in parentheses; EB: East Berlin, MVP: Mecklenburg-West Pomerania, BB: Brandenburg, SX(A): Saxony(-Anhalt);
Trust 1: "Can trust people", Trust 2: "Can't rely on anyone",
Trust 3: "Careful with strangers"; the latter two are recoded such that value 1 does not imply distrust, but trust. "Fairness" and "Cooperativeness" are binary variables representing whether the respondent perceives others to act fair or to be helpful.

4.2.4 Redistribution preferences and personality traits: 2005 cross-section

The results reported by Alesina and Fuchs-Schündeln (2007) and Rainer and Siedler (2008) clearly indicate that East Germans are relatively more in favor of state intervention in the form of income redistribution than their Western counterparts. We adapt the approach of Rainer and Siedler (2008) and add to it addressing potential heterogeneity among East Germans, i.e. we differentiate between Easterners who stayed in the former GDR and those who moved west after the fall of the iron curtain. Table 6 reports our cross-sectional estimates for attitudes towards progressive taxation and income redistribution which is based on the two SOEP 2005 survey questions outlined at the end of Section 4.1 above. Our findings corrobate the results of Rainer and Siedler (2008) inasmuch as our evidence also points to pro-working class redistribution preferences among East Germans. We however additionally find a difference between movers and individuals that did not move westwards, inasmuch as the latter are not in favor of such redistribution policies. Intuitively, this finding is straightforward as individuals who move quite likely do so because of promising economic expectations and possibly own prospects of working one's way up.

Table 6. SOEP 2005 cross-sectional estimates: Redistribution preferences

	Taxes for unskilled workers			Taxes for managers		
	Too little	Adequate	Too much	Too little	Adequate	Too much
East German	-0.004**	-0.058*	0.062*	0.123***	-0.089***	-0.034***
	(0.002)	(0.030)	(0.032)	(0.026)	(0.019)	(0.007)
Moved West	0.005	0.060	-0.064	-0.144***	0.091***	0.053***
	(0.004)	(0.038)	(0.042)	(0.043)	(0.024)	(0.019)
Controls	+	+	+	+	+	+
Pseudo-R^2		0.041			0.048	
N		10,473			10,473	

Notes: Ordered Probit estimation, marginal effects; ***, **, * denotes statistical significance at 1, 5, 10 percent level, respectively; robust standard errors given in parentheses.

We provide another complementing part of the overall picture in line with the findings of Alesina and Fuchs-Schündeln (2007) who show that East Germans are more likely

to believe that social conditions determine individual possibilities in life, but not the individual his- or herself. We add to this employing a small set certain personality traits that have an impact on socio-economic behavior and analyze whether these traits differ between East and West Germans. In particular, we employ SOEP information on individuals' external locus of control (Rotter 1966) as well indicator representing individuals' propensity to reciprocate positively or negatively. Locus of control refers to the individual's perception of the relation between his or her own behavior and its consequences. Consequently, individuals with an external LOC are prone to believing that chance or other factors beyond their control is the main determinant of the outcome they experience. This fits well into the context of trust since individuals with a high external locus of control should be less willing to trust in order to avoid external, and possibly negative impacts on their sphere of influence or behavior.

Reciprocity is a further measure on individual's personality that is important in our context. It means that "... in response to friendly actions, people are frequently much nicer and much more cooperative than predicted by the self-interest model. Conversely, in response to hostile actions they are frequently much more nasty and even brutal" (Fehr and Gächter 2000, p. 159). This concept thus relates to individuals' perceptions of others acting fair and helpful, as examined above, and particularly how they would react to either nice or hostile actions they experience.

The SOEP items we employ are again drawn from the 2005 wave only, so the following cross-sectional analyses should be interpreted with all needed attention. Yet, there is evidence that both reciprocity and external locus of control associate with relevant outcomes such as wages or unemployment propensity; cf. Dohmen *et al.* (2009) for reciprocity and Heineck and Anger (2010) for both reciprocity and external locus of control.

Table 7. SOEP 2005 cross-sectional estimates: Locus of control and Reciprocity

	Ext. LOC	Ext. LOC	Pos. Rec.	Pos. Rec.	Neg. Rec.	Neg. Rec.
East German	0.062*	0.105*	0.031	0.079	-0.012	-0.024
	(0.034)	(0.055)	(0.035)	(0.056)	(0.036)	(0.056)
Moved West	–	-0.069	–	-0.077	–	0.019
		(0.066)		(0.067)		(0.068)
Controls	+	+	+	+	+	+
Pseudo-R^2	0.094	0.094	0.016	0.017	0.059	0.059
N	16,629	16,629	16,629	16,629	16,629	16,629

Notes: Ordered Probit estimation, marginal effects; ***, **, * denotes statistical significance at 1, 5, 10 percent level, respectively; robust standard errors given in parentheses. The variables external locus of control (Ext. LOC), positive and negative reciprocity (Pos./Neg. Rec.) are standardized average values from the respective underlying measures. The items underlying external locus of control were identified in a first step using factor analysis.

The results of these additional exercises however are not as convincing as prior expectations might have induced. According to the findings provided in Table 7, East and West do not differ in their propensity to respond to other's actions, irrespective of those being positive or negative. In contrast, our estimates imply that East Germans have a higher external locus of control. That is, compared to their West German counterparts, East Germans, and particularly those who did not move west, are more likely believing that external forces shape the circumstances they live in. Again, we believe that this results fits well to our baseline argument that the former East German Communist system has left a long-lasting imprint on their citizens. Moreover, there is no hint towards convergence of this gap. Given that the East German economic conditions are still worse than the West German ones, one might argue and hope that these differentials will level off once the economic framework will allow East Germans to be less dependent on state provided transfers.

5 Conclusion

On November 9th 1989, when a bungled East German government announcement sent a surge of people westwards, swamping the checkpoints in the wall, a new chapter in German history began. From an applied economist's perspective the event of Germany's reunification represents a unique natural experiment. For decades official propaganda in the GDR had lambasted the market-based economy and society of the FRG as akin to cannibalism. The once omnipresent fear of denouncement and detainment seemingly ceased over night. Against this background, we addressed the question whether and if so by how much after 20 years of reunification restoration of social trust is completed, fairness and cooperativeness restored, and attitudes towards risk converged. While we find that risk attitudes fully converged in the second decade of reunification, it will take at least one generation for social trust and possibly much longer for perceived fairness and cooperativeness to converge. The implied trajectories of our estimates are shown to be in line with predictions from a model that incorporates individual responses both to incentives and to values inherited from earlier generations as recently suggested in the literature.

Appendix A

Proof of Proposition 1. To show that $\frac{\partial Y^1}{\partial n} > 0$, and Y^1 increases in n until $Y^1 \geq Y^0$ holds, is equivalent to show that $\frac{\partial \widetilde{y}^1}{\partial n} > 0$. Re-write equation (5) in the text

$$\widetilde{y}^1 = \{\ln d - \ln [\Psi n + l]\} \theta^{-1},$$

where $\Psi = w - l < 0$ for $l > w$; and differentiate with respect to n to obtain $\frac{\partial \widetilde{y}^1}{\partial n} = -\frac{1}{\Psi n}\theta^{-1} > 0$. ■

Appendix B

	2003-08 Mean	Std. Dev.	2004-08 Mean	Std. Dev.
Can trust people	0.055	(0.228)	–	
Can't rely on anyone	0.091	(0.288)	–	
Careful with strangers	0.117	(0.321)	–	
Fairness	0.515	(0.499)	–	
Cooperativeness	0.358	(0.479)	–	
Risk willingness	–		4.376	(2.327)
R is East German	0.303	(0.459)	0.302	(0.459)
Interview in 2008	0.437	(0.496)	0.445	(0.497)
Age	48.288	(17.503)	48.609	(17.601)
R is male	0.480	(0.499)	0.478	(0.499)
R is migrant	0.128	(0.334)	0.129	(0.335)
R is disabled	0.125	(0.331)	0.128	(0.334)
R is married	0.593	(0.491)	0.589	(0.491)
R is married, but separated	0.017	(0.131)	0.016	(0.128)
R is divorced	0.082	(0.275)	0.084	(0.278)
R is widowed	0.068	(0.253)	0.070	(0.256)
Education: missing	0.068	(0.251)	0.069	(0.255)
Education: no qualification	0.040	(0.197)	0.040	(0.196)
Education: intermediate sec.	0.352	(0.477)	0.351	(0.477)
Education: upper secondary	0.173	(0.379)	0.174	(0.379)
R has no vocational qualif.	0.238	(0.426)	0.237	(0.425)
R has university degree	0.097	(0.296)	0.098	(0.298)
Number of children	0.498	(0.869)	0.490	(0.868)
Log of net HH income	7.702	(0.540)	7.702	(0.542)
R is unemployed	0.070	(0.255)	0.071	(0.257)
R is retired	0.234	(0.423)	0.234	(0.423)
R is on maternity leave	0.022	(0.147)	0.022	(0.147)
R is out of labor force	0.132	(0.338)	0.136	(0.343)
R is in dual apprenticeship	0.024	(0.154)	0.024	(0.153)
R is civil servant	0.037	(0.189)	0.036	(0.187)
R is white collar worker	0.284	(0.451)	0.280	(0.449)
R is temporary employed	0.067	(0.250)	0.068	(0.251)
R has public employer	0.059	(0.235)	0.059	(0.236)
LM experience: full-time (yrs.)	17.442	(14.097)	17.530	(14.141)
LM experience: part-time (yrs.)	2.609	(5.621)	2.671	(5.674)
LM experience: unemploymt. (yrs.)	0.843	(2.045)	0.870	(2.071)
Father's education: missing	0.096	(0.294)	0.096	(0.295)
Father's education: other	0.029	(0.170)	0.029	(0.169)
Father's education: none	0.031	(0.173)	0.031	(0.174)

(continued on next page)

Father's education: middle sec.	0.135	(0.341)	0.135	(0.342)
Father's education: interm. sec.	0.007	(0.088)	0.007	(0.088)
Father's education: upper sec.	0.090	(0.286)	0.091	(0.288)
Mother's education: missing	0.084	(0.278)	0.085	(0.279)
Mother's education: other	0.023	(0.152)	0.023	(0.152)
Mother's education: none	0.037	(0.190)	0.037	(0.190)
Mother's education: middle sec.	0.166	(0.372)	0.168	(0.374)
Mother's education: interm. sec.	0.005	(0.074)	0.005	(0.076)
Mother's education: upper sec.	0.044	(0.206)	0.045	(0.208)
Father has university degree	0.105	(0.306)	0.104	(0.306)
Mother has university degree	0.054	(0.227)	0.055	(0.228)
Father's religion: missing	0.455	(0.498)	0.455	(0.498)
Father's religion: none	0.095	(0.293)	0.096	(0.295)
Father's religion: Protestant	0.237	(0.425)	0.236	(0.425)
Father's religion: other religion	0.027	(0.164)	0.027	(0.163)
Mother's religion: missing	0.464	(0.498)	0.465	(0.498)
Mother's religion: none	0.081	(0.273)	0.081	(0.274)
Mother's religion: Protestant	0.245	(0.430)	0.244	(0.429)
Mother's religion: other religion	0.026	(0.160)	0.026	(0.160)
Place raised to age 15: missing	0.045	(0.207)	0.044	(0.205)
Place raised to age 15: large city	0.209	(0.407)	0.209	(0.407)
Place raised to age 15: medium city	0.168	(0.374)	0.167	(0.373)
Place raised to age 15: small city	0.206	(0.405)	0.208	(0.406)
Still lives in town where raised	0.526	(0.499)	0.527	(0.499)
Regional Gini coefficient	0.276	(0.014)	0.277	(0.014)
Regional UE rate	10.127	(4.535)	10.123	(4.510)
Regional crime-solving rate	55.235	(5.818)	55.967	(5.991)
Regional GDP p.c.	111.292	(8.287)	112.701	(7.295)
Regional expenditure for education	3.378	(0.664)	3.322	(0.638)
Regional proportion of foreigners	8.112	(3.821)	8.088	(3.798)
N	31,707		32,196	

References

[1] Alesina, A. and N. Fuchs-Schündeln (2007), Good-Bye Lenin (or Not?): The Effect of Communism on People's Preferences, *American Economic Review* 97, 1507-1528.

[2] Alesina, A. and E. La Ferrara (2002), Who trusts others?, *Journal of Public Economics* 85, 207-234.

[3] Andreoni, J. (1990), Impure altruism and donations of public goods: A theory of warm-glow giving, *Economic Journal* 100, 464-477.

[4] Barr, J. and F. Passarelli (2009), Who has the power in the EU?, *Mathematical Social Sciences* 57, 339-366.

[5] Bonin, H., Constant, A., Tatsiramos, K., and K. F. Zimmermann (2009), Native-migrant differences in risk attitudes, *Applied Economics Letters* 16, 1581-1586.

[6] Bowles, S. (1998), Endogenous preferences: The cultural consequences of markets and other economic institutions, *Journal of Economic Literature* 36, 75-111.

[7] Buch, C. M. and F. Toubal (2009), Openness and growth: The long shadow of the Berlin Wall, *Journal of Macroeconomics* 31, 409-422.

[8] Burda, M. (2006), Factor Reallocation in Eastern Germany after Reunification, *American Economic Review Papers & Proceedings* 96, 368-376.

[9] Citizens' Committee (2010), *Stasi – Power and Banality*, Saxon Memorial Foundation, City of Leipzig, Leipzig

[10] Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., and G. G. Wagner (2005), Individual risk attitudes: New evidence from a large, representative experimentally-validated survey, forthcoming in *Journal of the European Economic Association*.

[11] Dohmen T, Falk A, Huffman D, Sunde U. (2009), Homo reciprocans: survey evidence on behavioural outcomes. *Economic Journal* 119, 592-612.

[12] Fehr. E. and S. Gächter (2000), Fairness and Retaliation: The Economics of Reciprocity, *Journal of Economic Perspectives* 14, 159-181.

[13] Fehr, E. and B. Rockenbach (2003), Detrimental Effects of Sanctions on Human Altruism, *Nature* 422, 137-140.

[14] Fehr, E. and K. M. Schmidt (2006), The Economics of Fairness, Reciprocity and Altruism: Experimental Evidence and New Theories, in Kolm, S.-C. and J. M. Ythier (eds.), *Handbook of the Economics of Giving, Altruism and Reciprocity*, Elsevier, Amsterdam, 615-691.

[15] Fernández, R. (2007), Women, work, and culture, *Journal of the European Economic Association* 5, 305-332.

[16] Fuchs-Schündeln, N. and R. Izem (2008), Explaining the low labor productivity in East Germany – A spatial analysis, mimeo, Harvard University.

[17] Gächter, S., Herrmann, B., and C. Thöni (2010), Culture and Cooperation, CESifo Working Paper 3070

[18] Goleman, D. (1997), *Emotional Intelligence*, Bantam Books, New York

[19] Greif, A. (1994), Cultural beliefs and the organization of society: A historical reflection on collectivist and individualist societies, *Journal of Political Economy* 102, 912-950.

[20] Guiso, L., Sapienza, P., and L. Zingales (2006), Does culture affect economic outcomes?, *Journal of Economic Perspectives* 20, 23-48.

[21] Heineck, G. and S. Anger (2010), The returns to cognitive abilities and personality traits in Germany, *Labour Economics* 17, 535-546.

[22] Hillinger, C. (1992), *Cyclical Growth in Market and Planned Economies*, Clarendon, Oxford

[23] Jensen, R. and E. Oster (2009), The Power of TV: Cable Television and Women's Status in India, *Quarterly Journal of Economics* 124, 1057-1094.

[24] Knack, S. and P. Keefer (1997), Does social capital has an economic payoff? A cross-country investigation, *Quarterly Journal of Economics* 112, 1251-1288.

[25] Koehler, J. O. (1999), *Stasi: the Untold Story of the East German Secret Police*, Westview Press, Boulder, Colorado

[26] Laidi, Z. (2010), Europe as a Risk Averse Power: A hypothesis, Garnet Policy Brief, No. 11, University of Warwick

[27] Malmendier, U. and S. Nagel (2009), Depression Babies: Do Macroeconomic Experiences Affect Risk-Taking?, NBER Working Paper 14813.

[28] Nelson, P. (1970), Information and Consumer Behavior, *Journal of Political Economy* 78, 311-329.

[29] Rainer, H. and T. Siedler (2008), Subjective income and employment expectations and preferences for redistribution, *Economics Letters* 99, 449-453.

[30] Rainer, H. and T. Siedler (2009), Does democracy foster trust? *Journal of Comparative Economics* 37, 251-269.

[31] Redding, S. J. and D. M. Sturm (2008), The Costs of Remoteness: Evidence from German Division and Reunification. *American Economic Review* 98, 1766-1797.

[32] Reinberg, A. and M. Hummel (2007), Der Trend bleibt – Geringqualifizierte sind häufiger arbeitslos, *IAB-Kurzbericht* 17/2007.

[33] Rotter J. (1966), Generalized expectancies for internal versus external control of reinforcement. In: Psychological Monographs, 80; Reprinted in Rotter et al. 1972. Applications of a social learning theory of personality. Holt, Reinhart and Winston Inc.: New York; p. 260–295.

[34] Slemrod, J. and P. Katuscak (2005), Do trust and trustworthiness pay off?, *Journal of Human Resources* 40, 621-646.

[35] Süssmuth, B., Heyne, M., and W. Maennig (2010), Induced Civic Pride and Integration, *Oxford Bulletin of Economics and Statistics* 72, 202-220.

[36] Sutter, M. and M. Kocher (2007), Trust and trustworthiness across different age groups, *Games and Economic Behavior* 59, 364-382.

[37] Uhlig, H. (2006), Regional Labor Markets, Network Externalities and Migration: The Case of German Reunification, *American Economic Review Papers & Proceedings* 96, 383-387.

[38] Tabellini, G. (2008a), Institutions and Culture, *Journal of the European Economic Association* 6, 255-294.

[39] Tabellini, G. (2008b), The scope of cooperation: Values and incentives, *Quarterly Journal of Economics* 123, 905-950.

[40] Wagner, G. G., Frick, J. R., and J. Schupp (2007), The German Socio-Economic Panel Study (SOEP) - Scope, Evolution and Enhancements, *Journal of Applied Social Science Studies* (*Schmollers Jahrbuch*) 127, 139-169.

[41] Zak, P. J. and A. Fakhar (2005), Neuroactive Hormones and Interpersonal Trust: International Evidence, *Economics and Human Biology* 4, 412-429.